

## Augmented renal clearance of vancomycin in suspected sepsis: single-center, retrospective pediatric cohort

### Study Question

What associations exist between augmented renal clearance in pediatric patients treated for suspected sepsis and vancomycin pharmacokinetics?

### Study Design & Measures

#### Study Population:

Hospitalized children (0-18 years) initiated on empiric vancomycin therapy for suspected sepsis.

#### Study Groups:

Patients were divided into two groups based on presence of augmented renal clearance defined as estimated glomerular filtration rate [eGFR] above 130 mL/min/1.73m<sup>2</sup>.

#### Study Location:

Tertiary children's hospital in Texas, USA.

#### Study Outcome:

Initial vancomycin trough levels (VTL).



**Of the 73 patients treated for sepsis, 32 (44%) had augmented renal clearance.**

*Children with ARC were older (0.3 vs 1.5,  $p = 0.001$ ), weighed more (5.0 vs 10.5,  $p < 0.001$ ), and had a greater body surface area (0.28 vs 0.48,  $p < 0.001$ ).*

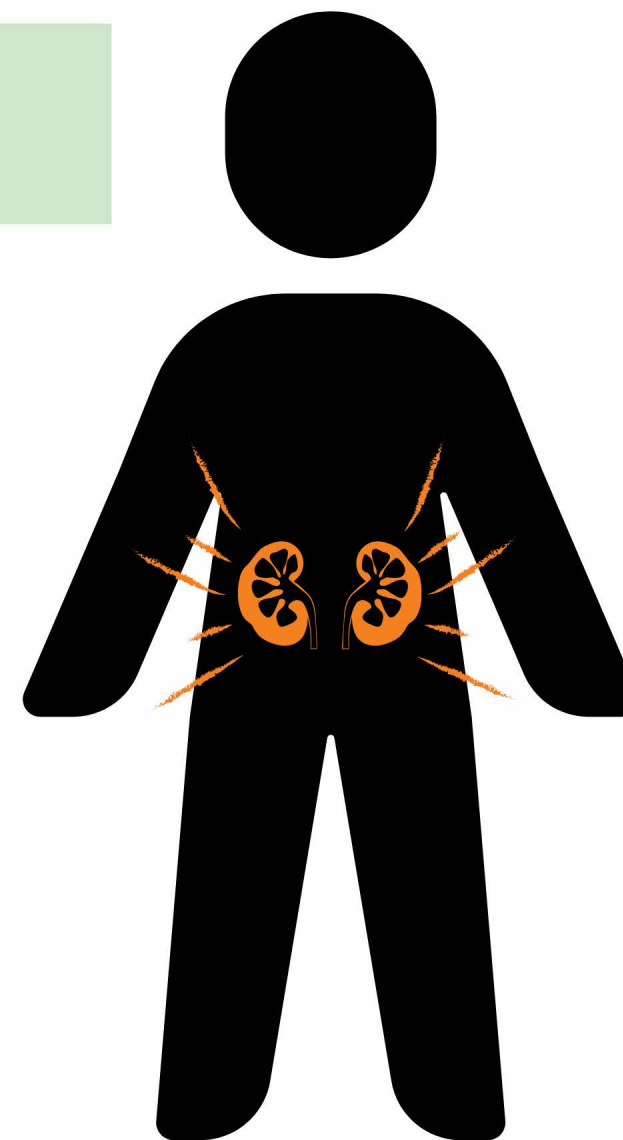


Augmented renal clearance was negatively associated with presence of cardiac comorbidities.

*OR: 0.18 (95% CI 0.07-0.50,  $p = 0.001$ )*



Neither race nor gender was associated with augmented renal clearance in this patient population.

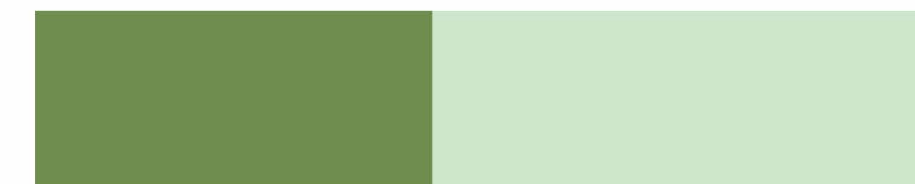


*Children with augmented renal clearance had higher odds of subtherapeutic vancomycin trough levels.*

**OR: 2.8 (95% CI 1.1-7.0,  $p < 0.03$ )**



ARC Group: 22/32 (69%) sub-therapeutic initial VTL



ARC Group: 18/41 (44%) sub-therapeutic initial VTL

### A Suggestion from the Authors:



**Studies should be done to identify patients with ARC who do/do not have high risk of septic AKI. This may help identify patients who are able to tolerate higher doses of vancomycin to attain appropriate levels.**

### Conclusion and Authors' Next Steps

**Sub-therapeutic VTL is associated with ARC in this single-center, retrospective cohort of children with suspected sepsis.**

*This problem may present a potential risk of treatment failure in gram positive sepsis or longer time to clinical response.*